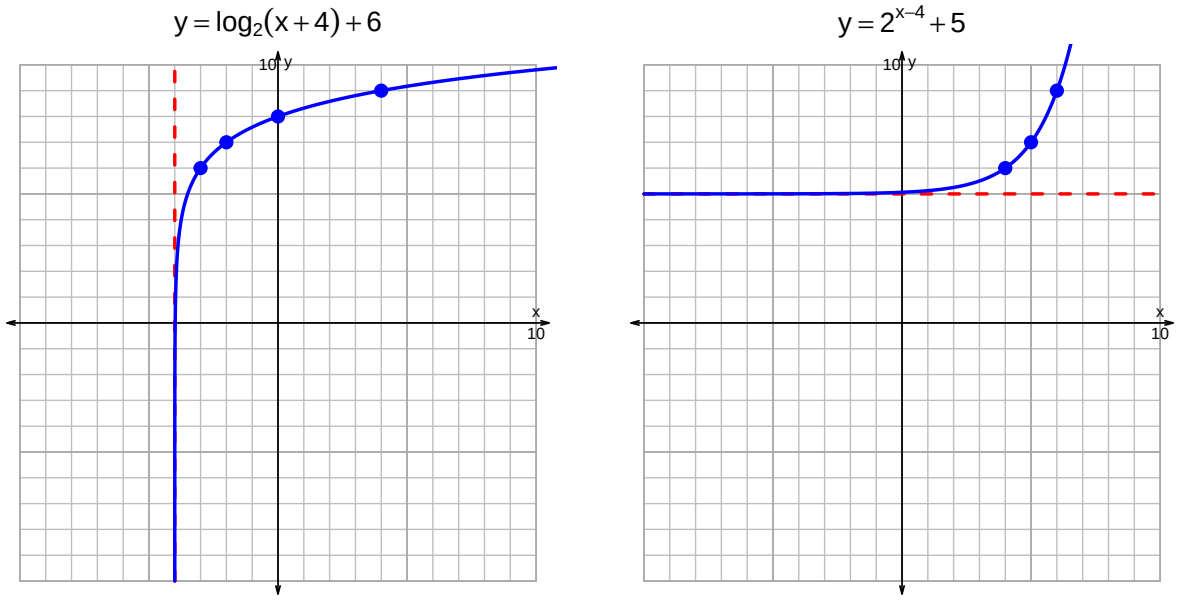
Name: Date:

S18QUIZ: EXP LOG (SLTN v250)

1. Graph $y = \log_2(x+4)+6$ and $y = 2^{x-4}+5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$11 = \left(\frac{4}{3}\right) \cdot 10^{-5t/7}$$

Divide both sides by $\frac{4}{3}$.

$$\frac{11 \cdot 3}{4} = 10^{-5t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{11 \cdot 3}{4}\right) = \frac{-5t}{7}$$

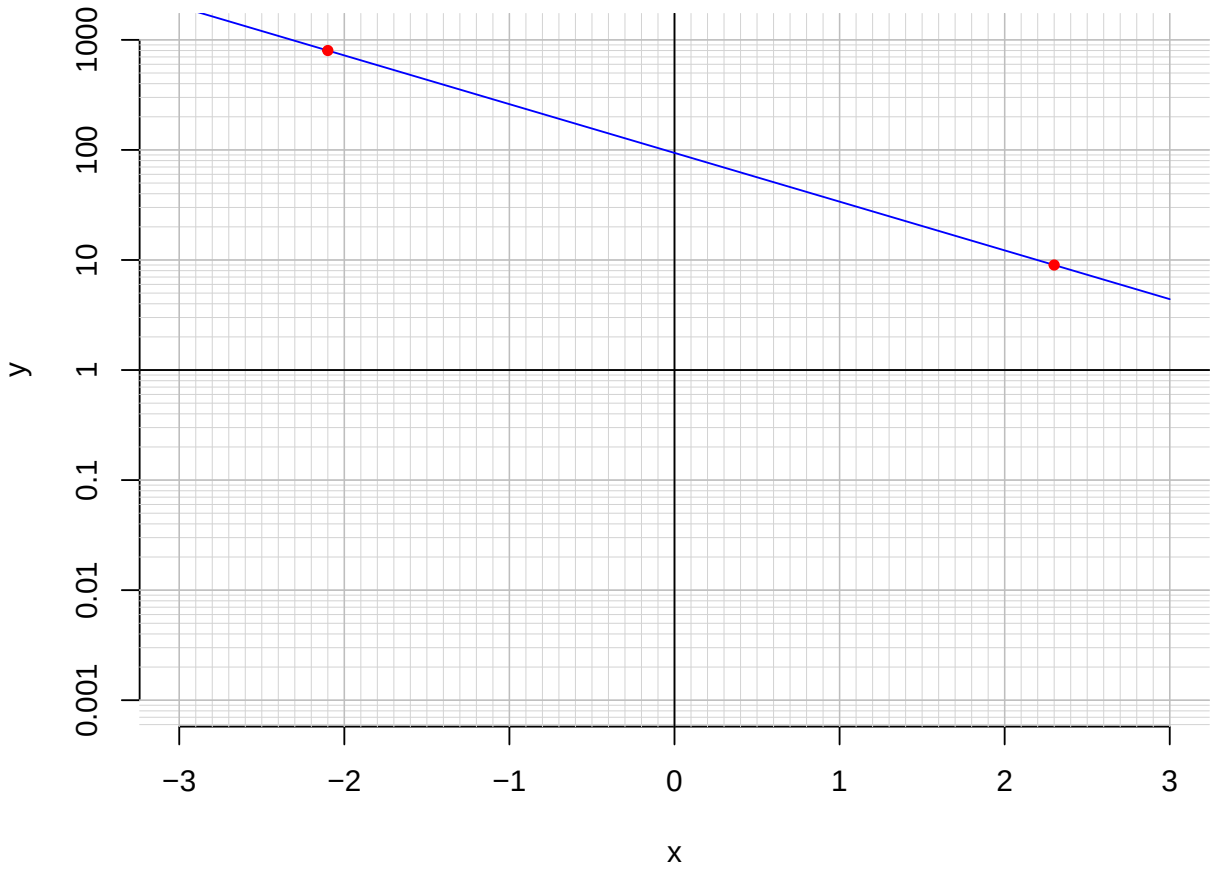
Divide both sides by $\frac{-5}{7}$.

$$\frac{-7}{5} \cdot \log_{10}\left(\frac{11 \cdot 3}{4}\right) = t$$

Switch sides.

$$t = \frac{-7}{5} \cdot \log_{10}\left(\frac{11 \cdot 3}{4}\right)$$

3. An exponential function $f(x) = 94 \cdot e^{-1.02x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(2.3)$.

$$f(2.3) = 9$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{1.02} \cdot \ln\left(\frac{x}{94}\right)$$

c. Using the plot above, evaluate $f^{-1}(800)$.

$$f^{-1}(800) = -2.1$$